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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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FLEIT KAIN GIBBONS GUTMAN BONGINI & BIANCO
21355 EAST DIXIE HIGHWAY
SUITE 115
MIAMI, FL 33180

EXAMINER

HAJNIK, DANIEL F

ART UNIT PAPER NUMBER

2671

DATE MAILED: 12/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/781,354	Applicant(s) DICKEN, VOLKER	
	Examiner Daniel F. Hajnik	Art Unit 2671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 1, 8, and 10 are objected to because of the following informalities:
Please change "visualisation" to "visualization". Please change "visualising" to "visualizing" Appropriate correction is required.
2. Claims 3 are objected to because of the following informalities: The phrase "the reference plane" lacks antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. Claims 6 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Regarding claim 6, the phrase "for example" (e.g.) renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).
5. Regarding claims 6 and 8, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

6. Claims 1-3, 6, and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Novak et al. (US Pub 2002/0028006 herein referred to as "Novak").

As per claims 1, 8, and 10, Novak teaches the claimed "providing of volumetric data ... belonging to a reference surface" by teaching of "Volumetric data (e.g. three-dimensional data) for a set of the lungs is loaded (step 105)" (paragraph [0050]) where the volumetric data is voxels. Novak teaches the claimed "reference surface" by teaching of "The local spinning plane is centered at a centroid and a local spinning axis of the anatomical structure of interest" (paragraph [0016]) where the local spinning plane is a reference surface.

Novak teaches the claimed "entering a user selected distance ... comprising a wheel mouse" by teaching of "A volume of interest may be selected by moving the positioning device such as a mouse or a joystick to navigate in the 3-D volumetric data to a particular point in the current slice" (paragraph [0040]).

Novak teaches the claimed "determining of second voxels" and the claimed "visualising of the second voxels" by teaching of "A volume of interest may be selected by moving the positioning device such as a mouse ... Once a volume of interest has been selected the user may use several visualization tools to make a decision about whether or not the volume of interest is a nodule". (paragraph [0040]). Here, the first volumetric data is the larger overall volume and the second volumetric data is the smaller subset of volume selected from the larger volume.

Novak does not explicitly teach the claimed "wheel mouse". However, It would have been obvious to one of ordinary skill in the art at the time of invention to use the "wheel mouse" as claimed because it recognized in the art that a mouse often uses an

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internal wheel(s) to detect movement and measurement movement (or measure a distance).

As per claims 2, 9, and 11, Novak teaches the claimed "performing a segmentation" by teaching of "The result of the automatic segmentation is shown in a separate window" (paragraph [0044]).

As per claim 3, Novak teaches the claimed "distance ... determined along a direction of projection" by teaching of "maximum intensity projection view" (paragraph [0013]) and by teaching of "A volume of interest may be selected by moving the positioning device such as a mouse" (paragraph [0040]).

Novak does not explicitly teach of directly associating the mouse movement selection (entering a user selected distance) with this projection view.

However, it would have been obvious to associate a distance with this mouse movement and with this projection view. By selecting distance using the mouse in the projection view, the user may have a better sense of distance and depth due to the projection of the view itself. Further, Novak teaches that the projection view of its system contains maximum intensity where it may be easier to make a proper selection (paragraph [0013]).

As per claim 6, Novak teaches the claimed "the volumetric data is medical image data" by teaching of "digital volumetric medical image of at least one lung" (paragraph [0011]).

As per claim 12, Novak teaches the claimed "volume rendering of the second voxels" by teaching of "shown in a separate window ... as a shaded surface display or a volume rendering" (paragraph [0044]).

7. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Novak in view of Zeng et al. (US Pub 2003/0099389 herein referred to as "Zeng").

As per claims 4 and 5, the reasons and rationale for the rejection of claim 3 is incorporated herein. Novak does not explicitly teach the claimed "distance ... determined by a minimum distance measure" and the claimed "distance measure being an Euclidean distance".

Zeng teaches the claimed limitations by teaching of "Chamfer distance is an approximation of Euclidean distance and can be computed very efficiently with recursive operations" (paragraph [0057]).

Zeng teaches that the Chamfer distance and Euclidean distance are related a minimum distance measure by teaching of achieve minimum distances for fitting during segmentation. Zeng teaches of "Segmentation often involves classifying and processing ... pixels of image data ... to determine whether it is a local maximum or minimum" (paragraph [0013]) and teaches of "The basic idea is to explicitly extract known organ surfaces ... This approach can preferably be implemented using a surface fitting mechanism ... and a chamfer distance potential" (paragraph [0054]).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Zeng with Novak. One advantage to the combination is provided

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by Zeng, which teaches of "One use of a chamfer potential is as a measure of how close the deformable surface-fitting model is to the boundary of an organ volume" (paragraph [0057]). Given these teachings, it would have been obvious to also make selections based upon the Euclidean or Chamfer distances in order to better measure a selection from the boundary of an organ volume.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Novak in view of Lauer et al. (US Patent 6310620, herein referred to as "Lauer")

As per claim 7, Novak does not explicitly teach the claimed "the volumetric data being three dimensional microscopy data". Lauer teaches the claimed limitations by teaching of "The input data can be acquired by microscopes" (col 5, lines 8-9).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine Lauer with Novak. One advantage to the combination is provided by Lauer, which teaches that input data from microscopes is useful for producing synthetic models based upon physical or real structures (col 5, lines 8-12).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Vining (US Patent 6083162) - abstract.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel F. Hajnik whose telephone number is (571) 272-7642. The examiner can normally be reached on Mon-Fri (8:30A-5:00P).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka J. Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Kim 12/12/05

DFH

Ulka Chauhan
ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER